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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/805,807 | 03/22/2004 | Ashish Singhal | 081445-0359 | 9961 |

7590 03/11/2005
Scott M. Day
Foley & Lardner LLP
777 East Wisconsin Avenue
Milwaukee, WI 53202-5306

EXAMINER

SAINT SURIN, JACQUES M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2856

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/805,807

Applicant(s)

TODOR SHELJASKOW, ET AL.

Examiner

Jacques M. Saint-Surin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004 and 27 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-36 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-13, 17 and 18 is/are rejected.
- 7) ☒ Claim(s) 3 and 14-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>08/27/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2, 4-10 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Smulders et al. (US Patent 6,792,360) in view of Franke et al. (US Patent 6,208,944).

Regarding claim 1, Smulders discloses a method for determining vibration amplitude to detect faults in mechanical equipment (systems and methods for detecting the development or presence of defects, or other impactive forces, in the components of a machine by analysis of the frequency spectrum of the vibrations of the machine, see: col. 1, lines 14-17); comprising:

estimating a data for the mechanical equipment (comprises a vibration sensor 112 estimating the most likely component defect fundamental frequency and its harmonics, and estimating the spectral energy related to these frequencies; the method further comprises estimating the energy associated with the frequency spectrum of the machine, see: col. 3, lines 37-42, Smulders further teaches data acquisition module 110 comprises a vibration sensor 112 that is coupled to the machine 120 to detect vibrations of the machine 120);

and utilizing the data to calculate the vibration amplitude limits (Smulders discloses the data analyzer module 136 consists of one or more software/hardware or firmware components for analyzing the vibration data of the machine 120 to identify a defect in a component of the machine 120. The data analyzer module 136 comprises a harmonic activity locator index generator 138 ("index generator 138") that analyzes the vibration data (i.e., the frequency spectrum of the machine 120) to produce a value indicative of the presence of a component defect, see: col. 5, lines 53-61). However, Smulders does not specifically disclose or suggest probability distribution. Franke discloses a pattern dictating a sequence or a probability distribution of parts of the frequency bands which are to be measured directly one after the other, see: col. 5, lines 29-32. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Smulders the techniques of Franke as taught above because a plurality of individual measurement signals which have been detected one after the other chronologically are thus provided for each measurement process and for the chronological sequence of sampling of vibration signals to be detected on one

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channel or more than one channel to be carried out in accordance with a predetermined pattern in order to calculate and display individual Fourier-transformed spectral parts in a reliable manner.

Regarding claim 2, Smulders discloses low pass filters that are obviously able of removing effectively the outlier data.

Regarding claims 4-10 and 17-18 the combination of Smulders and Franke discloses this procedure can also be repeated a number of times successively, so that it is possible to calculate a plurality of Fourier-transformed spectra (or sets of spectra) with the same bandwidth, and to combine this plurality of spectra in an averaged spectrum and then store these spectra, so that evaluation is possible based on the mean values, deviations and other statistical characteristics (see: Franke, col. 4, lines 64-67 and col. 5, lines 1-2).

5. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smulders et al. (US Patent 6,792,360) in view of Franke et al. (US Patent 6,208,944) and further in view of Kupinski et al. (US Patent 6,138,045).

Regarding claims 11-13, they differ from the above combination by reciting a kernel density method. Kupinski discloses kernel density estimation using an Epanechnikov kernel was employed to estimate this distribution [10], see: col. 7, lines 44-45. It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in the combination of Smulders in view of Franke the method of Kupinski because the kernel density estimation is a method similar to histogram

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analysis which would provide the advantages of determining a reliable data when calculating the probability distribution.

Allowable Subject Matter

6. Claims 19-36 are allowable over the prior art of record.
3. Claims 3, 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Conclusion


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is (571) 272-2206. The examiner can normally be reached on Mondays through Fridays 10:30 A.M. -7:00 P.M..

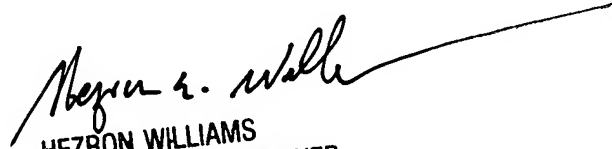
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272 2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jacques M. Saint-Surin
March 06, 2005


HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800